Recommended Screening Criteria

To: I-405 Steering Committee
From: Project Management Team
Date: October 28,1999

Introduction

The ultimate aim of the I-405 Corridor Program is to select a preferred alternative that addresses the need identified in the Purpose and Need statement. The Corridor Program has adopted a process whereby solutions or concepts are gradually screened down. The screening process is based on the assumption that, at the beginning, many concepts or solutions would be identified from a wide variety of sources, and there would be times when deliberate actions would be taken to decide which of those should be carried forward to further evaluation.

Screening criteria are needed to help the decision-makers carry out this exercise efficiently and effectively. One of the process goals for the Corridor Program is to select three packages of solutions, or preliminary alternatives, before the work to prepare an Environmental Impact Statement is initiated. Therefore, the selection of the screening criteria is one of the important decisions that the decision-makers must make in the early stage in this "alternative analysis" process. Once screening criteria are decided, the focus of the Program activities will be to produce information or data (quantified or qualified) and apply ratings to be able to make decisions to ultimately select a preferred alternative.

Review of the Adopted Analysis Process

The Steering and Executive Committees in their September meetings decided that the "Alternatives Analysis Process" should consist of two levels of screening. Figure 1 shows this process in a flow chart.

General Principles to Develop Screening Criteria

Based on the research and professional experience in other major studies, the following general principles have been used to select screening criteria:

1.Respond to Purpose and Need and transportation objectives.

2.Screen concepts within common modal categories at the first level screening. Then, measure effectiveness for the entire transportation system, inclusive of all potential transportation modes, at the second level.

3.Have clear definitions.

4.Be simple, but comprehensive. (Must strike a reasonable balance between comprehensiveness and simplicity.)

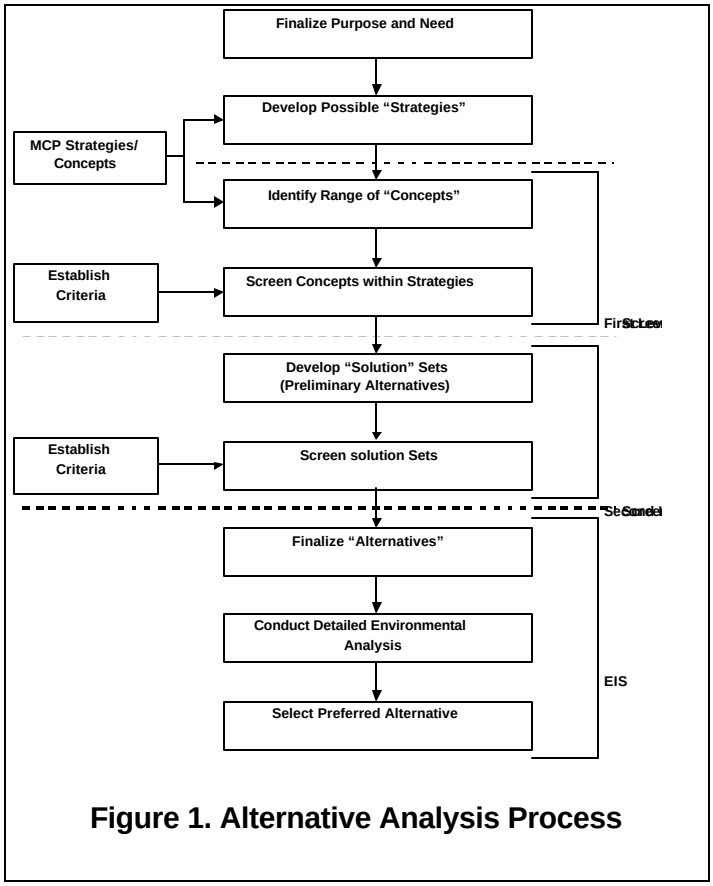

Figure 1. Alternative Analysis Process

Recommended First Level Screening Criteria

The purpose of the first level screening is to eliminate ideas or concepts that do not clearly meet the transportation objectives for the I-405 Corridor Program, that would not be possible or feasible to mitigate environmental impacts, and that would not be feasible to be implemented due to constraints. The concepts will be rated against the following criteria:

A. Will the concept meet the transportation objectives?

To be able to evaluate concepts with this criterion, the transportation objectives for the I-405 Corridor Program must be defined.

- **Objective: Improve mobility** – *the residents and workers within the study area have more opportunities and easy access to transportation modes, and making trips are more convenient regardless of a trip purpose and a mode used*

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- **Objective: Reduce roadway traffic congestion** – *improve congestion levels compared with 2020 no-build conditions.*

- **Objective: Improve safety** – *facilities are provided in such ways to reduce or eliminate conflicts and unsafe conditions between passenger vehicles, between trucks and passenger vehicles, between vehicles and pedestrians, and between bicycle riders and vehicles.*

B. Can we reasonably mitigate any known environmental impacts?

An action to improve the transportation system may have adverse impacts on the environment. The first level environmental screening will be conducted at a broad, non-quantitative level to identify whether any alternative is be expected to create severe adverse impacts that could not be reasonably mitigated.

The environmental objectives are:

- *To meet the Federal, State and local environmental laws and regulations.*
- *To identify the potential for mitigating options where the laws and regulations would not currently met.*
- *To identify any alternative that might be inordinately difficult and/or time-consuming to permit.*

Environmental indicators to be evaluated include effects related to:

- Class one wetlands
- Fish-bearing streams/Endangered Species Act issues
- General consistency with intent of land use plans and policies
- Section 4(f) and Section 106 properties
- Residential and commercial displacements
- Neighborhood disruption/proximity effects/community cohesion
- Environmental Justice

C. Is the concept feasible to implement?

At the first screening level, the implementation feasibility will be examined based on the following items:

- *Physical constrains or limitation*
- *Available technology*

D. How much will it cost?

A "ballpark" cost estimate will be made for each major concept. This estimate will be provided for information purposes only and will not be factored into the screening process itself.

Rating Scale for First Level Screening

There are many ways to rate concepts or alternatives. To make the first level screening process relatively simple and easy to understand, we propose the rating scale expressed with four symbols, which are defined as follows:

 Very likely to meet criterion

 Some potential to meet criterion

 Marginal potential to meet criterion

 No potential to meet criterion

The cost estimates will be rated according to a low, medium, and high scale. The cost ranges relating to these scales are being finalized.

Recommended Second Level Screening Criteria

The concepts that are selected for further evaluation at the end of the first screening effort will be packaged into "solutions" (preliminary alternatives). It is likely that there will be many solutions at that time. The next major task will be to reduce the number of "solutions" (preliminary alternatives) down to three sets. This effort will be more detailed than the first level screening. We are proposing to develop a more comprehensive set of screening criteria. They are grouped into several categories as suggested by federal guidelines. The table below shows the recommended screening criteria and corresponding definitions.

Table 1. Recommended second level screening criteria and definitions

Screening Criteria	Definitions
Transportation Performance	
Vehicle Miles of Travel	Study area-wide total
Vehicle Hours of Travel	Study area-wide total
Traffic Volumes	Traffic volumes by major segment across a variety of screenlines
Hours of traffic congestion	How many segments of I-405 and arterials are congested in a typical day; study area totals by functional classification
Safety	Whether there is potential for accident reduction
Mode split	How much increase or decrease in transit and HOV mode split (summarized at 3 screenlines)
Freight	Degree to which freight movements are likely to be impacted (qualitative scale)
Financial Performance	
Total cost	Aggregated cost of construction, right of way, engineering, operations and maintenance, and mitigation
Social Impacts	
Neighborhood disruption/proximity effects/community cohesion	Direct and spill-over effects on quality of life influenced by displacements, increased traffic, noise, changes in access, etc.
Displacements	Number of residential and commercial displacements.
Land use plans and policies	General consistency with the adopted regional and local land use plans and policies.
Environmental Justice	Disproportionately high and adverse effects on low-income and minority populations.
Environmental Impacts	
Noise	Effects of noise from operation.
Air quality	Effects on air emissions from operation.
Wetlands/Shorelines	Area of effect on class one wetlands and shorelines.
Section 4(f) and Section 106	Effects on recreation, historic, and cultural resources.
Fish-bearing streams/T&E Species	Crossings of water bodies and adverse effects on aquatic species related to Endangered Species Act compliance.
Critical upland habitat/T&E Species	Area of effect on critical upland habitat and adverse effects on upland species related to Endangered Species Act compliance.

Recommended Methodologies for Second Level Screening Criteria

Transportation Criteria

Transportation impacts will be estimated using the travel forecasting model and post-processing of results. Vehicle Miles and Hours of Travel will be directly output from the model, as will traffic volumes mode split data. Screenlines will be used to display the volume and mode split data. Hours of congestion will be post-processed using the model results and displayed for all major study area facilities on a map, as well as summarized in tabular form for the entire study area by functional classification (i.e. freeways such as I-405, SR 520 and I-90, and arterials). Safety and freight impacts will be qualitatively assessed using professional judgment.

Neighborhood disruption

A qualitative screening level evaluation of neighborhood quality of life impacts will be conducted through a preliminary assessment of displacements, traffic issues, noise, and changes in access related to each project concept. The evaluation will reflect the broad level of detail anticipated for the concepts at this stage.

Displacements

This screening analysis will rely on a preliminary quantitative estimate of residential and commercial displacements in selected areas where displacements are expected to be greatest in number, most concentrated, or highly significant. Direct effects will be estimated using data contained in the project GIS data base, and will be reported by order of magnitude for comparison among concepts. Supplemental data such as recent aerial photography or other existing records may be evaluated, if necessary.

Environmental Justice

This screening analysis will evaluate the potential for disproportionately high and adverse effects on low-income and minority populations, pursuant to Presidential Executive Order 12898. Maps of 1990 Census data will be reviewed to identify concentrations of these populations. Preliminary contact will be made with leaders of local minority and low-income organizations.

Land use plans and policies

This screening analysis will evaluate overall consistency of the concepts with provisions of the Washington State Growth Management Act, Vision 2020 Update, and local jurisdictions' comprehensive plans based on conversations with affected jurisdictions and professional judgment. The evaluation will focus especially on potential effects on land use and shorelines, development patterns, potential to influence growth within or outside the urban growth boundary, and how the concepts complement local and regional transportation plans.

Section 4(f) and Section 106 Resources

This screening analysis will evaluate potential impacts on known Section 4(f) resources including significant publicly owned parks, trails, and recreation areas; wildlife and waterfowl refuges; and significant historic sites. Section 106 resources to be evaluated include historic districts, buildings, objects, and archaeological sites significant in history, prehistory, archaeology, and culture. Direct effects on known and recorded resources will be estimated using data contained in the project GIS data base. Supplemental information related to cultural resources may be collected from the Washington State Office of Archaeology and Historic Preservation, regional and local inventory lists, and maps (maintained by municipalities and historical societies), if required.

Noise

This screening analysis will rely on a qualitative evaluation of potential effects of noise from operations for selected neighborhoods and other known sensitive receptors that have the potential to be more seriously affected. Professional judgment and rules of thumb will be applied to identify the potential for substantial increases in noise levels based on changes in traffic volumes and changes in proximity of noise sources to receptors.

Air quality

A qualitative screening level evaluation of potential effects of changes in emissions of nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs) from operation will be conducted based on professional judgment and the experience of other similar projects. Anticipated vehicle miles of travel (VMT) and average vehicle speed will be used to assess the potential for concepts to demonstrate conformity with requirements of the Clean Air Act Amendments. Modeling of air quality will not be conducted.

Wetlands/shorelines

This screening analysis will rely on a preliminary quantitative estimate of direct aerial effects on known, mapped class one wetlands and shorelines. Direct effects will be estimated using data contained in the project GIS data base, and will be reported by area of impact for comparison among concepts. Supplemental data such as recent aerial photography or other existing records may be evaluated, if necessary.

Fish-bearing streams/T&E species

This screening analysis will include a qualitative assessment of direct effects on known, mapped fish-bearing streams and water bodies. Direct effects will be estimated using data contained in the project GIS data base, supplemented with data from other existing records and professional judgment. Results will be reported by numbers of streams and water bodies affected, along

with a qualitative rating that reflects the seriousness of the impact and potential difficulty in complying with requirements of the Endangered Species Act.

Critical upland habitat/T&E species

A qualitative assessment of direct effects on known, mapped critical upland habitat and listed threatened and endangered species will be prepared. Direct effects will be estimated using data contained in the project GIS data base, supplemented with data from other existing records and professional judgment. Results will be reported by area of habitat affected, along with a qualitative rating that reflects the seriousness of the impact and potential difficulty in complying with requirements of the Endangered Species Act.

Rating Scale for Second Level Screening

For the second level screening, we propose to rate each screening criterion with a scale of 1 through 5. A definition of the scale will be developed for each criterion and discussed later. For example, a performance for the mode split criteria might be defined: 5 = increase of HOV mode split by 8-10 percent, 4 = increase by 5-7 percent, 3 = increase by 3-5 percent, 2 = increase by 1- 2 percent, and 1 = no chance or decrease.